

REMARKS/ARGUMENTS

This application has been reconsidered carefully in light of the Office Action dated as mailed on 25 May 2004. A careful reconsideration of the application by the Examiner in light of the foregoing amendments and the following remarks is respectfully requested.

5 This response is timely filed as it is filed within the three (3) month shortened statutory period for response to the outstanding Office Action.

10 This response is also accompanied with a check and/or authorization to charge deposit account for any additional claim fee due as a result of this Amendment because either the number of independent claims exceeds the number of independent claims for which fees have previously been paid, the total number of claims exceeds the total number of claims for which fees have previously been paid, or both.

Amendment to the Claims

By the above,

15 1. claim 16 has been rewritten to improve its form and to make more clear the invention which Applicant regard as his invention;

2. claim 28 has been rewritten in independent form including all of the limitations of the base claim and any intervening claims and

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3. claim 29 has been rewritten in independent form including all of the limitations of independent claim 21 rather than previously indicated underlying independent claim 24.

Claims 1-9, 11-19 and 21-29 remain in the application.

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Allowable Subject Matter

As a preliminary matter, the undersigned wishes to thank Examiner Lum for the indication that claims 8, 9 and 27 are allowable and the indication that claims 28 and 29 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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By the above, claim 28 has been so rewritten. Thus, claim 28 is believed to be in condition for allowance and notice to that effect is solicited.

On further review of the pending claims, it became evident that claim 29 incorrectly identified claim 24 rather than claim 21 as the underlying independent claim. By the above, claim 29 has been rewritten in independent form including all of the limitations of independent claim 21 rather than previously indicated underlying independent claim 24. In view thereof, claim 29 is also believed to be in condition for allowance and notice to that effect is solicited.

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Claim Objections

Claims 16, 27 and 29 were objected to because certain elements were alleged to lack antecedent basis.

In particular, claim 16 was objected to for an alleged lack of antecedent basis for the “length” previously referred to in line 3. By the above, claim 16 has been rewritten to ensure provision of proper antecedent basis. In view thereof, the objection to claim 16 is believed to have been clearly overcome and notification to that effect is solicited.

Claim 27 was objected to for an alleged lack of antecedent basis for the term “first”. Claim 27 states “the elongated diffuser device and the inflator are secured together at at least one location between the first and second lateral ends of the elongated diffuser device”. Claim 27 is dependent on claim 8. Claim 8 was previously amended to state: “the elongated diffuser device having first and second opposed lateral ends and also having first and second longitudinal ends”. In view thereof, it is respectfully submitted that there is proper antecedent basis for use of term “first” in claim 27.

Claim 29 was objected to for an alleged lack of antecedent basis for the term “discharge treatment element”. As identified above, on further review it became evident that claim 29 incorrectly identified claim 24 rather than claim 21 as the underlying independent claim. By the above, claim 29 has been rewritten in independent form including all of the limitations of independent claim 21 rather than previously indicated underlying independent claim 24. In view thereof, the objection to claim 29 is believed to have been clearly overcome and notification to that effect is solicited.

Claim Rejections - 35 U.S.C. §102

1. Claim 7 was rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 6,164,688 to Einsiedel et al. (hereinafter “Einsiedel”).

Such rejection is respectfully traversed.

The Action asserts that:

Einsiedel discloses an inflator comprising[:]

Elongated arcuate tube 12 containing [an] elongated supply 11 of pyrotechnic gas generant material.

It is respectfully submitted, however, that item “11” in Einsiedel is **NOT** an elongated supply of pyrotechnic gas generant material. Einsiedel identifies item 11 as a gas generator (see column 3, line 36, for example) and, in FIG. 1, clearly depicts the gas

generator 11 in the form of a square. While Einsiedel shows an elongated filler tube 12 fastened to the gas generator 11 (see column 1, line 66 to column 2, line 2, for example), the filler tube 12 does not contain an “elongated supply 11 of pyrotechnic gas generant material” as has been alleged in the Action. In this regard it is noted that
5 Einsiedel specifically identifies the dash line 16, shown in FIG. 1 of Einsiedel as extending through the filler tube 12, as simply being the “tube axis”. (See column 3, line 39.)

It is respectfully submitted that Einsiedel fails to show or suggest as inflator comprising: an elongated hollow tubular member containing an elongated
10 supply of pyrotechnic gas generant material reactable to produce a supply of gas, the tubular member having a length to diameter ratio greater than 20 and including a plurality of longitudinally-spaced apart gas exit orifices wherethrough at least a portion of the supply of gas provided by reaction of the pyrotechnic gas generant material can be expelled from the tubular member, wherein the elongated hollow
15 tubular member is arcuate, as required by claim 7.

In view thereof, claim 7 is believed patentable over the art of record and notification to that effect is solicited.

2. Claims 16, 17 and 19 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 6,145,876 to Hamilton (hereinafter "Hamilton").

The Action asserts that FIG. 2 of Hamilton shows an elongated discharge treatment element secured with the inflator at selected positions along the latter's length (i.e., at the ends).

Such rejections are respectfully traversed.

5 Claim 16 is an independent claim with claims 17 and 19 dependent thereon. Claim 16 requires an inflation assembly comprising:

an elongated inflator adapted to provide a gas-containing discharge through selected locations spaced along the length of the inflator;

10 an elongated discharge treatment element secured with the inflator at selected positions along the length of the inflator and the length of the discharge treatment element, respectively, the discharge treatment element effective to treat at least a portion of the gas discharged from the inflator contacting thereagainst and to deform to create spaced apart gas flow paths between the inflator and the treatment element, the gas flow paths spaced apart along the length of the inflator and the length of the treatment element, respectively; and

15 an inflatable curtain airbag cushion in inflation fluid communication with the inflator.

20 It is respectfully submitted that such structure is neither shown nor suggested by Hamilton. Claim 16 not only requires that the elongated discharge treatment element be secured with the inflator at selected positions along the length of the inflator but also that the elongated discharge treatment element be secured with

the inflator at selected positions along the length of the elongated discharge treatment element. Further, claim 16 requires the discharge treatment element deform to create spaced apart gas flow paths between the tubular member and the treatment element, where the gas flow paths are “spaced apart along the length of the inflator **and the** 5 **length of the treatment element**, respectively”. (Emphasis added.) The spacing apart of such gas flow paths “along the length of the inflator **and the length of the treatment element**, respectively” is neither shown nor suggested by Hamilton.

In view thereof, claim 16 is believed patentable over the art of record and notification to that effect is solicited.

10 Claims 17 and 19 each depends, directly or indirectly, on claim 16. As claim 16 is believed to be patentable over the prior art of record, as discussed above, so too claims 17 and 19 which are each dependent thereon are also believed to be patentable thereover and notification to that effect is solicited.

15 Claim Rejections - 35 U.S.C. §103

1. Claims 11-15, 18, 21 and 23-25 were rejected under 35 U.S.C. §103 as being unpatentable over Hamilton in view of Einsiedel.

Regarding claims 11 and 13-15, the Action, after acknowledging that 20 Hamilton does not specify the tube having a length-to-diameter ratio greater than 20,

as required by independent claim 13, relies on Einsiedel as “suggesting” this ratio and the Action asserts that “it would have been obvious to one of ordinary skill in the art at the time the invention was made to include this ratio, as exemplified in Einsiedel, to suggest the scope of applicability. It is obvious that this feature is application-dependent.”

Such rejections are respectfully traversed.

Claim 13 requires an inflation assembly comprising:

an inflator comprising an elongated hollow tubular member containing an elongated supply of pyrotechnic gas generant material reactable to produce a supply of gas, the tubular member having a length to diameter ratio greater than 20 and including a plurality of longitudinally-spaced apart gas exit orifices wherethrough at least a portion of the supply of gas provided by reaction of the pyrotechnic gas generant material can be expelled from the tubular member and

an elongated discharge treatment element having a length and secured with the tubular member at selected positions along the length of the tubular member, the discharge treatment element effective to treat at least a portion of the gas expelled from the tubular member contacting thereagainst and to deform to create spaced apart gas flow paths between the tubular member and the treatment element, the gas flow paths spaced apart along the length of the tubular member and the length of the treatment element, the treatment element also directing at least a portion of gas expelled from the tubular member into an associated inflatable device.

Such an inflator assembly is neither shown nor suggested by the proposed combination of Hamilton with Einsiedel. As submitted above, Einsiedel does not show or suggest “an elongated hollow tubular member containing an elongated supply of pyrotechnic gas generant material reactable to produce a supply of gas”, as claimed. As disclosed in Einsiedel, the gas filler tube (12) thereof is connected to the gas generator (11). (See Abstract.) This is in sharp contrast to the claimed invention wherein the inflator (i.e., the gas generator) comprises “an elongated hollow tubular member containing an elongated supply of pyrotechnic gas generant material reactable to produce a supply of gas”, as claimed.

Claim 18 depends on claim 17 which in turn depends on claim 16. As claims 16 and 17 are believed to be patentable over Hamilton for at least the reasons advanced above and as the proposed combination of Einsiedel with Hamilton do not overcome the shortcomings of the rejections based on Hamilton as, for example, Einsiedel does not show or suggest “an elongated hollow tubular member containing an elongated supply of pyrotechnic gas generant material reactable to produce a supply of gas”, as discussed above, so too claim 18 which is dependent thereon is also believed to be patentable thereover and notification to that effect is solicited.

In addition, claim 18 requires the elongated hollow tubular member to be arcuate. While the Action cites Einsiedel as showing an arcuate tube, as submitted above, the tube element 12 shown in Einsiedel does not correspond to the claimed “elongated hollow tubular member containing an elongated supply of pyrotechnic gas generant material reactable to produce a supply of gas”. Thus, claim 18 is believed to be further patentable over the prior art of record.

Claims 12 and 25 each depend, directly or indirectly, on claim 13. As claim 13 is believed to be patentable over the prior art of record, as discussed above, so too claims 12 and 25 which are each dependent thereon are also believed to be patentable thereover and notification to that effect is solicited.

In addition, claims 12 and 25 each requires the elongated hollow tubular member to be arcuate. As submitted above, an arcuate “elongated hollow tubular member containing an elongated supply of pyrotechnic gas generant material reactable to produce a supply of gas”, as claimed, is nowhere shown or suggested by Hamilton or Einsiedel alone or in combination. Thus, claims 12 and 25 are believed to be further patentable over the prior art of record.

Claims 21 and 24 are independent claims directed to specified methods of inflating an inflatable device.

Claim 21 requires:

5 reacting an elongated supply of pyrotechnic gas generant
material within an elongated hollow tubular member of an inflator
having a length to diameter ratio greater than 20 to produce a supply of
gas along the length of the tubular member, and
 expelling at least a portion of the supply of gas through
selected locations spaced along the length of the inflator,
 wherein, subsequent to expulsion from the tubular
member, the method additionally comprises:
10 treating at least a portion of supply of expelled gas to
form a treated gas, the treating step including,
 contacting expelled gas onto an elongated treatment
element adjacent the inflator and
 deforming the treatment element to create spaced apart
15 gas flow paths between the inflator and the treatment element, the gas
flow paths spaced apart along the respective lengths of the inflator and
the treatment element; and
 directing the treated gas through the spaced apart gas flow
paths into the inflatable device.
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As submitted above, such spacing apart of gas flow paths between such
an inflator and such a treatment element is not shown or suggested by the combination
of Hamilton in view of Einsiedel. In particular, the spacing apart of such gas flow
paths between such an inflator and such a treatment element is not shown in Hamilton
25 wherein, it appears, that a single flow path is formed between the confining member
52 and the timing member 96. See Hamilton, FIGS. 6A-6D, for example.

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In view thereof, claim 21 and claim 23 (which is dependent thereon) are believed to be patentable over the art of record and notification to that effect is solicited.

Claim 24 requires:

5 reacting an elongated supply of pyrotechnic gas generant material within an elongated hollow tubular member of an inflator having a length to diameter ratio greater than 20 to produce a supply of gas along the length of the tubular member, and
10 expelling at least a portion of the supply of gas through selected locations spaced along the length of the inflator, wherein, prior to reaction of the pyrotechnic gas generant material, the hollow tubular member is bent to conform to an associated inflator-accepting site in an automotive vehicle in which the inflator is placed.

15 Thus, claim 24 requires reacting an elongated supply of pyrotechnic gas generant material within an elongated hollow tubular member of an inflator having a length to diameter ratio greater than 20 to produce a supply of gas along the length of the tubular member. As submitted above, the combination of Hamilton in view of Einsiedel does not show or suggest the claimed structure. Correspondingly, the
20 combination of Hamilton in view of Einsiedel does not show or suggest a method of inflating an inflatable device, as claimed.

In view thereof, claim 24 is believed to be patentable over the art of record and notification to that effect is solicited.

2. Claims 2 and 4 were rejected under 35 U.S.C. §103 as being unpatentable over Hamilton in view of Einsiedel and further in view of U.S. Patent 5,845,933 to Walker et al. (hereinafter “Walker”).

Claim 2 depends directly on claim 13 and requires that at least a portion of the supply of pyrotechnic gas generant material comprise a plurality of cylindrical annular-shaped grains axially aligned end to end along the length of the tubular member. Claim 4 depends directly on claim 2 and requires that the cylindrical annular-shaped grains form an internal cavity longitudinally extending substantially through the supply of pyrotechnic gas generant material, the inflator additionally comprising an elongated ignition article extending within the internal cavity.

As the shortcomings of the rejection of underlying claim 13 based on the proposed combination of Hamilton with Einsiedel are not overcome by the further combination of Walker therewith, claims 2 and 4 are believed to be patentable over the prior art of record and notification to that effect is solicited.

3. Claim 3 was rejected under 35 U.S.C. §103(a) as being unpatentable over Hamilton in view of Einsiedel and Walker and further in view of U.S. Patent 6,068,290 to Sheng (hereinafter “Sheng”).

Claim 3 depends directly on claim 2 and indirectly on claim 13. As the shortcomings of the rejection of underlying claim 13 based on the proposed combination of Hamilton and Einsiedel and the shortcomings of the rejection of

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underlying claim 2 based on the proposed combination of Hamilton, Einsiedel and Walker are not believed overcome by the further proposed combination of either Sheng therewith, claim 3 is believed allowable over the prior art of record and notification to that effect is solicited.

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4. Claims 5 and 6 were rejected under 35 U.S.C. §103(a) as being unpatentable over Hamilton in view Einsiedel and further in view of U.S. Patent 5,551,724 to Armstrong III et al. (hereinafter "Armstrong").

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Claims 5 and 6 each depend directly or indirectly on claim 13. As the shortcomings of the rejection of underlying claim 13 based on the proposed combination of Hamilton and Einsiedel are not believed overcome by the further proposed combination of Armstrong therewith, claims 5 and 6 are believed allowable over the prior art of record and notification to that effect is solicited.

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Moreover, claim 5 requires that the inflation assembly include a gas diffusible containment member within the elongated hollow tubular member and directly adjacently surrounding at least a portion of the supply of pyrotechnic gas generant material.

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Such inclusion of a gas diffusible containment member within the elongated hollow tubular member and directly adjacently surrounding at least a portion of the supply of pyrotechnic gas generant material, is not believed to be shown or suggested by Armstrong.

Thus, claims 5 and 6 are believed allowable over the prior art of record and notification to that effect is solicited.

5 5. Claims 22 and 26 were rejected under 35 U.S.C. §103(a) as being unpatentable over Hamilton in view Einsiedel and further in view of U.S. Patent 4,158,696 to Wilhelm et al. (hereinafter "Wilhelm").

10 Claim 22 depends on claim 21 and claim 26 depends on claim 24. As the shortcomings of the rejections of underlying claims 21 and 24 based on the proposed combination of Hamilton and Einsiedel are not believed overcome by the further proposed combination of Wilhelm therewith, claims 22 and 26 are believed to be allowable over the prior art of record and notification to that effect is solicited.

15 Moreover, claims 22 and 26 each requires that the elongated supply of pyrotechnic gas generant material react substantially simultaneously. Such substantially simultaneous reaction is in sharp contrast to Hamilton which describes and explains the linear ignition that occurs therein. See Hamilton, column 13, lines 11-35, for example.

20 In view thereof, it is respectfully submitted that the proposed modification of Hamilton to include a material which can be ignited substantially simultaneously, such as allegedly shown in Wilhelm, is believed to be clearly contrary to the express disclosure and teachings in Hamilton. Thus, such rejection is believed to be improper.

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Consequently, claims 22 and 26 are also believed to be allowable over the prior art of record and notification to that effect is solicited.

Conclusion

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It is believed that all pending claims are in condition for allowance and notification to that effect is solicited. However, should the Examiner detect any remaining issue or have any question, the Examiner is kindly requested to contact the undersigned, preferably by telephone, in an effort to expedite examination of the application.

Respectfully submitted,



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